REMARKS

INTRODUCTION:

In accordance with the foregoing, claim 8 has been canceled without prejudice or disclaimer, and claims 1, 9, 10, 11 and 12 have been amended. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-7 and 9-14 are under consideration. Claims 15-35 are withdrawn. Reconsideration is respectfully requested.

ENTRY OF RESPONSE UNDER 37 C.F.R. §1.116:

Applicants request entry of this Rule 116 Response and Request for Reconsideration because:

(a) at least one of the rejected claims has been canceled thereby at least reducing the issues for appeal;

(b) it is believed that the amendments of claims 1, 9, 10, 11 and 12 put this application into condition for allowance;

(c) the amendments were not earlier presented because the Applicants believed in good faith that the cited prior art did not disclose the present invention as previously claimed;

(d) the amendments of claims 1, 9, 10, 11 and 12 should not entail any further search by the Examiner since no new features are being added or no new issues are being raised; and/or

(e) the amendments place the application at least into a better form for appeal.

The Manual of Patent Examining Procedures sets forth in §714.12 that "[a]ny amendment that would place the case either in condition for allowance or in better form for appeal may be entered." (Underlining added for emphasis) Moreover, §714.13 sets forth that "[t]he Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified." The Manual of Patent Examining Procedures further articulates that the reason for any non-entry should be explained expressly in the Advisory Action.

EXAMINER'S RESPONSE:

In the Office Action, at pages 1-4, numbered paragraphs 1-8, the Examiner responded to Applicant's arguments filed July 3, 2006. Applicants thank the Examiner for the clarifications.

It is respectfully submitted that the reason claim 14 of Segal was described was that claim 14 described a system for color clipping, and hence, set forth the elements of Segal that should, if Segal is anticipatory, be relevant to the anticipatory analysis with respect to claim 1 of the present invention. Applicants were not ignoring the specific citations by the Examiner of the Segal specification, but rather were interpreting the system of Segal with respect to claim 14 of Segal as a vehicle to compare the system of Segal with claim 1 of the present invention.

It is respectfully submitted that there may be a misunderstanding of what is being compared. Historically, color temperature is the measurement of color expressed in Kelvin (K). The reason this measurement is called a "temperature" is that it was derived from a theoretical object called a "black body radiator." When the radiator is heated, it changes from black to red to yellow to white to blue. The lower the Kelvin rating, the "warmer" or more yellow the light. The higher the rating, the "cooler" or more blue the light.

Segal's invention relates to displaying surfaces of images, wherein "the invention relates to color clipping of extremely bright images, taking into account surface color and texture, while giving the appearance of a very bright surface" (emphasis added) (Segal, col. 1, lines 8-12). An image generated by computer graphics or by digital photography represents a 3D set of colors which is called the image gamut. In general, this image gamut contains points which are outside the device gamut, and therefore cannot be reproduced correctly. In this case, the exterior colors must be transformed into the destination gamut in order to display them. The color clipping process ensures that the modified color is producible in the target color.

The transformation is called "gamut clipping" or "color clipping" when only image colors outside the destination gamut are changed. Numerous simple rendering software applications apply the non-hue-preserving "pro channel" clipping commonly used in classical color photography. More general gamut mapping techniques typically modify the original image colors little near an unchanged kernel of the destination gamut, and changing the colors more strongly as one moves away from the kernel, ensuring a soft transition between an exact reproduction and heavily modified image colors. In general, the most important common requirement of the existing approaches is hue preservation. Values of lightness and the chroma (or saturation) must change simultaneously, depending on hue.

"Hue" is the attribute of visual sensation which has given rise to color names such as blue, green, yellow, purple, and so on. "Saturation" is the attribute of color perception that expresses the colorfulness of an area, judged in proportion to its brightness, or the color's degree of departure from an achromatic grey color, regardless of the color's brightness. Thus, the more saturated a color is, the farther away it is from the neutral and gray region of a chromaticity diagram. Similarly, the closer a color is positioned on a line away from a spectrum

locus and toward a white point of the chromaticity diagram, the more unsaturated the color is.

Hence, the following three adjustments may be made in a color system:

Depth cueing (the changing of the light intensity at a point as a function of the point's distance from the viewer);

Color mapping (the process by which the light intensities calculated as a result of the lighting and depth cueing processes are mapped to the dynamic color capabilities of the subsequent display system); and

Color clipping (the process by which intensities that exceed the maximum intensity supported by the dynamic color capabilities of the display system are replaced with the maximum intensity value or as in Segal's case, for extremely bright images, with an intensity value based on his formula).

In the Brief Summary of the Invention, Segal states:

> According to the present invention, color clipping takes into account the actual color of the surface, including texture mapping, while still giving the appearance of a very bright surface. Further, the invention provides color clipping that does not result in a washed-out image. According to the invention, there is provided a method and system for color clipping an image to be displayed, the image having at least one value to be color clipped. (emphasis added)
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> The method and system includes determining a maximum value of at least one color component for at least one value. Also included is determining a ratio of the maximum value to a maximum allowable value. A scaling factor is determined based on the determined ratio. The value to be color clipped is set to a value including the scaling factor. (emphasis added)
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> In one embodiment, the scaling factor is non-linear. In another embodiment, the scaling factor is logarithmic.
>
> In an embodiment, the value is color components of at least one pixel.
>
> In one variation, the image to be displayed includes at least one surface, and there are provided a plurality of values to be color clipped.
>
> In another embodiment, determining the maximum value includes obtaining the value of each color component, and determining the maximum value of the obtained values. In yet another embodiment, determining the ratio further includes obtaining the maximum allowable value. In another embodiment, determining the scaling factor further includes computing the scaling factor as the Log_{10} of the ratio; or includes adding the value 1 to the scaling factor, and multiplying by a variable scale factor.
>
> In another embodiment, setting the value to be color clipped includes determining the value including the scaling factor to be:
>
> In one variation, $(x\text{-}Color/Max_{Component})$ is positive. In another variation, the scaling factor is non-linear.
>
> The system and method further include displaying the image to be displayed, the image including the color-clipped value.

Hence, Segal teaches (Segal, col. 2, line 59 through col. 3, line 4, line 16):

1. Compute the maximum value of all the color components (for example, RGB) of the pixel determining a ratio of the maximum value $Max_{Component}$ to the maximum allowable value Max_{Pixel}.

2. Compute the ratio of the maximum value ($Max_{Component}$) to the maximum allowable value (Max_{Pixel}).

3. Compute the Exponent as the Log_{10} of the ratio, add 1, and multiply by a variable scaling constant (or 1 if not specified).

4. For each color component, set the pixel value to the scaled pixel value as follows:

$Max_{Pixel} - Max_{Pixel} *(1.0001-Color/ Max_{Component})^{Exponent}$

where Color is the predetermined value of the color as computed by the rendering algorithm. The preferred value, 1.0001, is used to ensure that (1-Color/Max) is positive. Roundoff error could cause color/max to be ever so slightly >1, but (1.0001-Color/Max) will always be positive. The principle is to utilize (1.0+epsilon-Color/Max), where epsilon is some small roundoff prevention number.

Generally, the color clipping will be done at display time. Further, it can be performed for one or more selected surfaces, or for all surfaces.

It should be noted that, Applicants agree that Segal's formula may be rewritten as "$Max_{Pixel} - Max_{Pixel} *(1.0001-Color/ Max_{Component})^{Exponent} = Max_{Pixel}(1-(1.0001-Color/ Max_{Component})^{Exponent})$. However, it is respectfully submitted that the term "1-1(1.0001-Color/ $Max_{Component})^{Exponent}$" may not be considered a "predetermined ratio," but rather, in contrast, represents a difference. A ratio is a quotient of two mathematical expressions. That is, "1-(1.0001-Color/ $Max_{Component})^{Exponent}$" represents a difference, i.e., 1 minus (1.0001-Color/ $Max_{Component})^{Exponent}$. Simply because a mathematical expression includes a quotient inside another mathematical expression does not turn that entire mathematical expression into a ratio. Hence, it is respectfully submitted that the terminology "1-1(1.0001-Color/ $Max_{Component})^{Exponent}$" does not represent a predetermined ratio.

Thus, as set forth above, Segal teaches "color clipping," which is based on a single adjustment to each of the pixel values for each color component (see Segal, col. 4, lines 54-59 and Table 2) using the above formula. Hence, in contrast to traditional color clipping wherein scaled pixel values for Red, Green and Blue are all 255 (see Segal, Table 3), Segal adjusts each of Red, Green and Blue using the above formula so that, for example, an input of Red 637.5, Green 510.0, and Blue 382.5 are converted to Red 255, Green 228 and Blue 184 (see Segal, Tables I and 2). Hence, an adjusted pixel value for each color component is determined

by Segal.

In contrast, the present invention recites "automatically adjusting the brightness and the color temperature of a screen to a substantially optimum state according to input RGB signals" (see paragraph [0005] of the specification). Hence, two different values are being adjusted, brightness and color temperature. That is, for example, as described in paragraphs [0030]-[0032] of the specification, the RGB color signal generator 105 detects and stores the maximum value of each of the input RGB color signals and stores the total maximum value of the input RGB color signals.

1) A difference value is detected by comparing the maximum values of the RGB color signals. For example, if R_{MAX} - G_{MAX} = DIFFERENCE, and if DIFFERENCE > REFERENCE VALUE, a color signal that has a color value greater than the reference value exists, and the color temperature of the detected color signal is increased to a predetermined value. That is, another color temperature exists in the display system which has a color value greater than the reference value, and the system controller provides a predetermined value to adjust the existing color temperature to the adjusted color temperature.

2) The first predetermined critical value is set at a value wherein the brightness level of pixels in the windowing corresponds to substantially full white. The second predetermined critical value is set at a value wherein the brightness level of pixels in the windowing corresponds to substantially full black. (see paragraph [0024] of the specification). If the total maximum value of the input RGB color signals is greater than the first predetermined critical value, the brightness level of the input RGB color signals is reduced by a predetermined ratio. If the total maximum value of the input RGB signals is less than the second predetermined critical value, the brightness level of the input RGB color signals is increased by a predetermined ratio.

Independent claim 1 has been amended to include the features of claim 8, and claim 8 has been cancelled without prejudice or disclaimer. Claims 9-11 have been amended to depend from amended claim 1. Independent claim 12 has been amended for clarity. Thus, it is respectfully submitted that the present invention adjusts the color temperature value using a predetermined value and adjusts, up or down, the brightness level of pixels using a predetermined ratio, which is not taught or suggested by the cited prior art.

Hence, amended independent claims 1 and 12, and the claims depending therefrom are submitted to be patentable over the cited prior art.

REJECTION UNDER 35 U.S.C. §102:

A. In the Office Action, at pages 5-6, numbered paragraph 10-15, claims 1 and 4-7 were

rejected under 35 U.S.C. §102(e) as being anticipated by Segal (USPN 6,791,567; hereafter, Segal). This rejection is traversed and reconsideration is requested.

As noted above, independent claim 1 of the present invention has been amended to include the features of claim 8. Claim 8 has been cancelled without prejudice or disclaimer.

It is respectfully submitted that amended independent claim 1 of the present invention recites a combination of adjusting the color temperature value using a predetermined value and adjusting, up or down, the brightness level of pixels using a predetermined ratio, which is not taught or suggested by Segal (see above).

Hence, amended independent claim 1 of the present invention is submitted not to be anticipated under 35 U.S.C. §102(e) by Segal (USPN 6,791,567).

Since claims 4-7 depend, directly or indirectly, from amended independent claim 1 of the present invention, claims 4-7 are not anticipated under 35 U.S.C. §102(e) by Segal (USPN 6,791,567) for at least the reasons amended independent claim 1 is not anticipated under 35 U.S.C. §102(e) by Segal (USPN 6,791,567).

B. In the Office Action, at pages 6-7, numbered paragraphs 16-20, claims 8-11 were rejected under 35 U.S.C. §102(e) as being anticipated by Shiota (US Publication 2004/0001165; hereafter, Shiota). This rejection is traversed and reconsideration is requested.

Independent claim 8 has been cancelled without prejudice or disclaimer. The features of claim 8 have been added to independent claim 1. Claims 9-11 have been amended to depend from amended independent claim 1.

Hence, the rejections of claims 8-11 under 35 U.S.C. §102(e) as being anticipated by Shiota (US Publication 2004/0001165) are now moot.

REJECTION UNDER 35 U.S.C. §103:

A. In the Office Action, at pages 8-9, numbered paragraphs 22-24, claims 2 and 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over Segal (USPN 6,791,567; hereafter, Segal) in view of Park (US Publication 2002/0163527; hereafter, Park). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

Independent claim 1 has been amended to include the features of claim 8, which has been cancelled without prejudice or disclaimer.

Segal fails to teach or suggest an apparatus that adjusts the color temperature value using a predetermined value and adjusts, up or down, the brightness level of pixels using a

predetermined ratio, as is set forth in amended independent claim 1 of the present invention.

As admitted by the Examiner, Segal does not disclose an apparatus in which a second predetermined critical value determined in a case where the brightness level of pixels in the area corresponds to substantially black and does not disclose that if the total maximum value is less than the second predetermined critical value, the RGB color signal generator increases the brightness level of the image on the screen by another of the predetermined ratios by generating brighter RGB color signals.

Park does not teach or suggest an apparatus that, in combination, adjusts the color temperature value using a predetermined value and adjusts, up or down, the brightness level of pixels using a predetermined ratio, as is set forth in amended independent claim 1 of the present invention.

Since neither Segal nor Park, alone or in combination, teach adjustment of color temperature and brightness level, it is respectfully submitted that amended independent claim 1 is patentable under 35 U.S.C. §103(a) over Segal (USPN 6,791,567 in view of Park (US Publication 2002/0163527). Since claims 2 and 3 depend from amended claim 1 of the present invention, claims 2 and 3 are submitted to be patentable under 35 U.S.C. §103(a) over Segal (USPN 6,791,567 in view of Park (US Publication 2002/0163527) for at least the reasons that amended claim 1 is patentable under 35 U.S.C. §103(a) over Segal (USPN 6,791,567 in view of Park (US Publication 2002/0163527).

B. In the Office Action, at pages 9-10, numbered paragraphs 25-27, claims 12-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Segal (USPN 6,791,567; hereafter, Segal) in view of Shiota (US Publication 2004/0001165; hereafter, Shiota).

It is respectfully submitted that neither Segar nor Shiota teaches increasing or decreasing a brightness level of the input RGB color signal based on the comparison result between the total maximum value with a predetermined critical value, as is recited in amended independent claim 12 of the present invention.

As admitted by the Examiner, Segal does not disclose an apparatus for adjusting a color temperature of a screen on which input RGB color signals are displayed, the apparatus comprising: a RGB color signal generator to detect a maximum value of each of a plurality of color signals comprising the RGB color signals, to compare the maximum values, and to generate other RGB color signals, if one of the maximum values is greater than the others, having a color temperature increased to a predetermined value; and a system controller to provide the RGB color signal generator with the predetermined value and data on conditions necessary for detecting a color signal having the higher maximum value than the other color

signals.

Shiota teaches an "image processing apparatus which **corrects a gray scale** by extending part of a luminance level range of an input video **luminance signal** to a dynamic range of a processing system, comprising: ...a luminance signal correcting means which extends the input video luminance signal so that the corrected minimum value obtained by the minimum value correcting means becomes a minimum value of the dynamic range of the processing system" (emphasis added) (see Shiota, claim 1, Abstract). That is, Shiota teaches gray scale correction using a luminance signal wherein color-difference signals or RGB signals are not saturated irrespectively of the degree of correction of a luminance signal at the time of gray-scale correction (Shiota [0007]). Since "saturation" is the attribute of color perception that expresses the colorfulness of an area, judged in proportion to its brightness, or the color's degree of departure from an achromatic grey color, regardless of the color's brightness, the more saturated a color is, the farther away it is from the neutral and gray region of a chromaticity diagram, Shiota does not teach or suggest an apparatus that adjusts the color temperature value using a predetermined value and adjusts, up or down, the brightness level of pixels using a predetermined ratio, as is set forth in amended independent claim 12 of the present invention.

Hence, even if combined, Segal and/or Shiota do not teach or suggest amended independent claim 12 of the present invention.

Thus, amended claim 12 of the present invention is submitted to be patentable under 35 U.S.C. §103(a) over Segal (USPN 6,791,567) in view of Shiota (US Publication 2004/0001165). Since claims 13-14 depend from amended claim 12, claims 13-14 are submitted to be patentable under 35 U.S.C. §103(a) over Segal (USPN 6,791,567) in view of Shiota (US Publication 2004/0001165) for at least the reasons amended claim 12 is patentable under 35 U.S.C. §103(a) over Segal (USPN 6,791,567) in view of Shiota (US Publication 2004/0001165).

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited. At a minimum, this Amendment should be entered at least for purposes of Appeal as it either clarifies and/or narrows the issues for consideration by the Board.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution

can be expedited and possibly concluded by the Examiner contacting the undersigned attorney for a telephone interview to discuss any such remaining issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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